1633

Certificate of Mailing

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Rachel Herman

#15 JC68 2/13/01

PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of Ivarie et al.

Serial No.: 09/173,864

Filed: October 16, 1998

For: **NOVEL TRANSGENIC BIRDS AND THEIR EGGS**

Docket No.: 24011-0002

Examiner: Sumesh Kaushal

Group Art Unit: 1633

TRANSMITTAL

Assistant Commissioner for Patents
Washington, D.C. 20231

Sir:

1. Transmitted herewith for filing in the above-identified patent application is:
   - X Amendment (5 pages)
   - X Declaration Under 37 CFR 1.132
   - X Jeffrey C. Rapp, Ph.D. Curriculum Vitae
   - X Other; Specify Return Postcard.

2. Fee Calculation
   - X No additional claim fee is required.
   - ____ Amendment increases number of claims

ADDITIONAL CLAIM FEE CALCULATION

Claims Remaining After Amendment:	23 Total, 8 Independent			
Highest No. Previously Paid For:	25 Total, 8 Independent			
	Claims After Amendment Less Number Paid For	Number Extra	Rate	Fee
Total Claims	20 - =	0	x $ 18/9	$-0-
Independent Claims	3 - =	0	x $ 80/40	$-0-

* If less than zero, enter "0".

Additional Claim Fee ..... $-0-

3. X As a small entity applicant is entitled to a 50% reduction in fees: ..... $-0-

4. X Applicant hereby petitions for an Extension of Time of 3 month(s), pursuant to Rule 1.136(a). Fee required $445

5. ____ Other fees due: Specify _____ ..... $-0-

Total Fees Due $445

6. Payment of Fees
   - X A check in the amount of $445 is enclosed.
   - X Charge Deposit Account No. 08-1641 in the amount of $445. A duplicate of this transmittal is attached.

7. X The Commissioner is hereby authorized to charge any additional fees (or credit any overpayment) associated with this communication and which may be required under 37 CFR §1.16 or § 1.17 to Account No. 08-1641, referencing Docket No. 24011-0002. A duplicate sheet is attached.

8. X Correspondence Customer Numeber: 25213.

By: _____
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CURRICULUM VITAE

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EDUCATION

Undergraduate (1982-1986)
Institution: University of Notre Dame, Notre Dame, IN 46556
B.S., 1986 in microbiology

Predoctoral Trainee (1986-1993)
Institution: Texas A&M University, College Station, TX 77843
Ph.D., 1993 in Biochemistry and Biophysics
Research area: chloroplast gene expression (with J.E. Mullet)

National Research Council Postdoctoral Fellowship (1993-1995)
Institution: Centers for Disease Control and Prevention, Atlanta, GA 30333
Research area: human herpesvirus-6 mRNA expression (with P.E. Pellett)

National Institutes of Health Postdoctoral Fellowship (1995-1997)
Institution: University of Georgia, Athens, GA 30602
Research area: baculovirus gene expression (with L.K. Miller)

Postdoctoral Fellowship (1997-1999)
Institution: University of Georgia, Athens, GA 30602
Research area: expression of foreign genes in the hen oviduct (with R.D. Ivarie)

AWARDS

Fourth Annual Penn State Symposium in Plant Physiology Travel Grant (1989)
National Research Council Postdoctoral Fellowship (1993-1995)
U.S. Department of Agriculture Small Business Innovation Research Grant (2000)

PROFESSIONAL SOCIETIES

American Association for the Advancement of Science (AAAS), member

RESEARCH INTERESTS

My research interest is the study of gene expression at the molecular level. As a graduate student, my primary research project involved measurement of *in vivo* transcript levels and in vitro transcription rates of several barley (*Hordeum vulgare*) chloroplast genes. A conclusion from this study is that transcription of barley chloroplast genes during development of the organelle is a dynamic process, following a cascade pattern rather than the previous notion of "all or nothing" transcription of chloroplast genes.

In my first postdoctoral position, I used a sensitive quantitative-competitive RT-PCR technique to measure transcript levels and determine the kinetics of expression of various human herpesvirus 6 (HHV-6) genes. Conclusions from this work are that the HHV-6 homolog of the adeno-associated type II *rep* gene is expressed at very low mRNA levels and is spliced in infected Molt-3 cells.

In my second postdoctoral position, I discovered a previously uncharacterized gene, termed lef-12, of the baculovirus AcMNPV. The product of this gene is required for optimal expression of viral late and very late genes.

My third postdoctoral position involved producing transgenic chickens by a retroviral-mediated method which expressed a human pharmaceutical protein, human interferon α-2b (hIFN) in hen egg white. This work led to my current position with AviGenics, inc.

SUMMARY OF PRESENT RESEARCH

I am currently studying the expression of hIFN and erythropoietin (EPO) in the hen oviduct. The eventual goal of the project is to produce transgenic chickens which will lay eggs containing microgram to milligram quantities of hIFN and EPO in hen egg white for clinical studies.

TECHNICAL SKILLS

High throughput DNA sequence detection with an Applied Biosystem 7700 Sequence Detector, nucleic acid quantitation with 672 GeneScan analysis software and an Applied Biosystems 373 automated sequencer; cDNA library construction; BAC, cosmid, and lambda cloning; *in vitro* RNA synthesis; subcellular fractionation using percoll density gradients; nucleic acid purification; Northern and Southern blotting; radioactive nucleic acid quantitation with the Betascope 603 Blot Analyzer and Molecular Dynamics PhosphorImager; PCR gene cloning of genomic DNA and cDNA; HPLC analysis of nucleotides; S1 nuclease, primer extension, and RACE mapping of transcript termini; PCR amplification and competitive quantitation of mRNA; FPLC purification of polypeptides; SDS polyacrylamide gel electrophoresis and immunoblotting of polypeptides; protein quantitation by ELISA; phase contrast and interference contrast light microscopy; hen oviduct primary cell culture; chloroplast run-on transcription assay; insect, avian, and mammalian cell culture; production of engineered, replication-deficient avian retroviruses; gene synthesis by overlap PCR; site-directed mutagenesis; immunofluorescence microscopy; hen surgery and suturing.

PERSONAL INFORMATION

Birthdate: November 30, 1964 Birthplace: Tampa, FL
Nationality: U.S.A. Sex: Male
Marital status: married, 1993
Wife: Martha R. DeHart

BIBLIOGRAPHY

Baumgartner, B.J., Rapp, J.C., and Mullet, J.E. (1989). Plastid transcription activity and DNA copy number increase early in barley chloroplast development. *Plant Physiology* **89**, 1011-1018.

Mullet, J.E., Rapp, J.C., Baumgartner, B.J., Berends-Sexton, T. and Christopher, D.A. (1990). Regulation of chloroplast biogenesis in barley. NATO/FEBS Plant Molecular Biology Advanced Study Institute, Bavaria, Germany, May 14-23.

Rapp, J.C. and Mullet, J.E. (1991). Chloroplast transcription is required to express the nuclear genes *rbcS* and *cab*. Plastid DNA copy number is regulated independently. *Plant Molecular Biology* **17**, 813-823.

Rapp, J.C., Baumgartner, B.J., and Mullet, J.E. (1992). Quantitative analysis of transcription and RNA levels of fifteen barley chloroplast genes: transcription rates and mRNA levels vary over 300-fold; predicted mRNA stabilities vary 30-fold. *Journal of Biological Chemistry* **267**, 21404-21411.

Baumgartner, B.J., Rapp, J.C., and Mullet, J.E. (1993). Plastid genes encoding the transcription/translation apparatus are differentially transcribed early in barley chloroplast development; evidence for selective stabilization of *psbA* mRNA. *Plant Physiology* **101**, 781-791.

Inoue, N., Dambaugh, T.R., Rapp, J.C., and Pellett, P.E. (1994). Alphaherpesvirus origin-binding protein homolog encoded by human herpesvirus 6B, a betaherpesvirus, binds to nucleotide sequences that are similar to ori regions of alphaherpesviruses. *Journal of Virology* **68**, 4126-4136.

Rapp, J.C., Wilson, J.A., and Miller, L.K. (1998). Nineteen Baculovirus Open Reading Frames, Including LEF-12, Support Late Gene Expression. *Journal of Virology* **72**, 10197-10206.

Rapp, J.C., Krug, L.T., Inoue N, Dambaugh T.R., and Pellett P.E. (2000). U94, the human herpesvirus 6 homolog of the parvovirus nonstructural gene, is highly conserved among isolates and is expressed at low mRNA levels as a spliced transcript. *Virology* **268**, 504-516.

ABSTRACTS

Rapp, J.C., Baumgartner, B.J., and Mullet, J.E. (1989). Modulation of plastid transcription and DNA levels during primary barley leaf development. Physiology, Biochemistry, and Genetics of Nongreen Plastids, Penn State University, May 18-20.

Mullet, J.E., Baumgartner, B.J., Rapp, J.C., and Christopher, D.A.(1990). Coordination of chorophyll and chlorophyll-apoprotein biosynthesis; a blue-light induced promoter maintains *psbD/C* gene expression in barley chloroplasts. UCLA Symposia on Molecular Strategies for Crop Improvement, Keystone, Colorado, April 16-22.

Rapp, J.C. and Mullet, J.E. (1990). Chloroplast transcription is required to express *rbcS* and *cab*, two nuclear genes which encode plastid proteins. Florida Winter Organelle Meeting, Clearwater, Florida, February 22-25.

Baumgartner, B.J., Rapp, J.C., and Mullet, J.E. (1991). Regulation of gene transcription in barley chloroplasts. Annual Meeting of the American Society of Plant Physiologists, Albuquerque, New Mexico, July 28-August 1.

Rapp, J.C., Baumgartner, B.J., and Mullet, J.E. (1991). Dynamic regulation of chloroplast gene expression during barley leaf development. Third International Congress of the International Society for Plant Molecular Biology, Tucson, Arizona, October 6-11.

Rapp, J.C., Dambaugh, T.R., and Pellett, P.E. (1994). Kinetics of parvovirus *rep* homolog mRNA accumulation during HHV-6B(Z29) infection of Molt-3 cells. 19th International Herpesvirus Workshop, Vancouver, British Columbia, Canada, July 30-August 5.

Rapp, J.C., Dambaugh, T.R., and Pellett, P.E. (1995). Parvovirus*Rep* Homolog mRNA Accumulates During HHV-6B(Z29) Infection of Molt-3 Cells in the Absence of *de novo* Protein Synthesis. International Conference on Human Herpesviruses 6 and 7, Atlanta, Georgia, April 7-10.

Rapp, J.C., Inoue, N., Dambaugh, T.R., and Pellett, P.E. (1995). HHV-6B(Z29) mRNA kinetics and mapping: HSV-1 α27 homolog is not expressed as an α-gene and the adeno-associated virus type II Rep homolog is spliced. 20th International Herpesvirus Workshop, Groningen, the Netherlands, July 29-August 3.

References available upon request